

BIRDS Frequently Asked Questions (last updated 03/22/2016)

How do I give user feedback on BIRDS?

Suggestions by users will be added to this list for future improvements. Please email Priya Lavappa at priya.lavappa@nist.gov or birds@nist.gov with any suggestions you may have to add to this list for future improvements.

What is the purpose of BIRDS?

BIRDS is designed to allow a user, without having any significant background in sustainability, to compare the sustainability performance of a whole building as the energy efficiency of the building is increased. The predefined building prototypes allow a user to quickly select the type of building in which they are interested, and compare the sustainability performance as the energy efficiency measures incorporated into the building changed, either based on building energy standards/codes or incremental energy efficiency features.

What can I do in the BIRDS software?

Currently a user can compare the energy, environmental, and economic performance of a **new commercial building or single-family detached residential building** across different locations, study periods, energy efficiency designs (based on building energy standards/codes), and environmental preferences using the Commercial Building and Residential Building databases. Note that at the moment, the single-family detached residential buildings assume a wood-framed, slab-on-grade house. The third database focused on Low-Energy Residential Buildings allows the user to compare the energy, environmental, and economic performance of 240 000 designs for a single building prototype based on NIST's NZERTF (<http://www.nist.gov/el/nzertf/>) for a single location (Gaithersburg, MD) across different study periods, discount rates, construction quality, and financing options. A new feature included in the Low-Energy Residential database web interface is a "Download" data option, allowing the user to analyze the data outside of BIRDS.

Is BIRDS a finished product?

BIRDS v3.0 is the 3rd version of a tool that will be updated annually, both in terms of functionality and ease-of-use. See below for a list of updates that may be included in future versions of BIRDS.

When will a new and improved version of BIRDS be available?

BIRDS v3.1 is scheduled to be publically available in late 2017, and will include some of the new features discussed below.

What new data will be included in future versions of BIRDS?

BIRDS v3.1 will expand the Low-Energy Residential database by incorporating:

- (1) Add Brick Façade Wall Assembly option because it is a common residential design option in Maryland.

Additional database enhancements that will be included in new versions of BIRDS as time permits include:

Low-Energy Residential Database

- (1) Add gas space heating and water heating options because natural gas is predominantly used in Maryland
- (2) Add additional locations for which the building design can represent
- (3) Add alternative foundation options (slab, crawlspace, finished basement)
- (4) Add additional prototypes that represent common building designs in the region as well as the rest of the U.S.
- (5) Calculate more complex economic analysis, including more detailed financing analysis, social cost of carbon option, and LCC metrics

Residential Building Database

- (1) Update of the Residential Database to include 2015 IECC
- (2) Add alternative foundation options (crawlspace, unfinished basement, finished basement)

Commercial Building Database

- (1) Update of database using DOE Reference Buildings as the prototype building designs to include the most recent editions of ASHRAE 90.1
- (2) Add IgCC/ASHRAE 189.1 building designs

What new functionality is planned on being incorporated into newer versions of BIRDS?

New functionality coming in BIRDS v3.1:

Low-Energy Residential Database

- (1) New Graphics will be incorporated. Some specific suggestions that are being considered are as follows:
 - a. **Summary Tables** of key datapoint (e.g. lowest LCC, lowest cost net-zero design)
 - b. **Scatterplots** to allow for viewing all selected building options or optimization curve on a single graph.
 - c. Adding the option for **stacked bar graphs** to show both the total values for a metric as well as the fraction of each value in the subcategories (e.g. life-cycle costs shown as the combination of first costs, energy costs, MRR costs, and residual value).
 - d. Adding a **radial chart** option to view the results of multiple metrics at once time (e.g. LCC, energy, and LCA at one time or all 12 environmental categories at one time)
- (2) Additional Metrics that will be comparable within BIRDS as well as through the download data option, including the first thermal comfort and indoor air quality (IAQ) as well as additional LCC metrics.
- (3) Based on user feedback, case studies, and sensitivity analysis, additional options may be added for the following:
 - a. Discount Rates
 - b. Financing
 - c. TBD

Residential Building Database

- (1) The Residential Building Database will be incorporated into the web interface of the Low-Energy Residential Database to simplify the user experience.
- (2) TBD

Commercial Building Database

- (1) The Commercial Building Database will be incorporated into the web interface of the Low-Energy Residential Database to simplify the user experience once the database has been updated.
- (2) TBD

BIRDS (All Databases)

“Introduction” and “How To” Videos to help users understand what BIRDS is (and isn’t) and how to use the tools.

Please email Priya Lavappa at priya.lavappa@nist.gov or the BIRDS team at birds@nist.gov any suggestions you may have to add to this list for future improvements.

What other tools has NIST developed that are related to BIRDS?

Prior to the development of BIRDS, NIST's Applied Economics Office (AEO) developed BEES (Building for Environmental and Economic Sustainability), which allows for sustainability performance comparisons of similar building products (e.g. insulation, concrete, flooring). BIRDS uses the BEES sustainability framework and expands it to whole buildings. The BEES framework is summarized on its main page: <http://www.nist.gov/el/economics/BEESSoftware.cfm>. The most recent version of BEES (BEES Online) is accessible here: <http://ws680.nist.gov/Bees/>. A total overhaul of BEES Online BEES v2.0 is currently under development and is scheduled to be publically available in late 2017. BEES 2.0 will update each of the product categories in BEES Online with up-to-date LCI data, methodologies, and processes as well as add additional user features such as product filtering and alternative LCIA impact methods.

The BIRDS tool is designed for high level decision-making, not individual building design decisions. To assist architects, designers, and homeowners on specific building design decisions, AEO is collaborating with NREL's OpenStudio team (open source GUI for EnergyPlus) to allow an OpenStudio user to create their own custom building design with OpenStudio and run the BIRDS sustainability calculations without leaving OpenStudio. A beta version for this BIRDS-OS integration tool is planned to be completed in late 2016.

If you are interested in learning more about these other tools, please follow the associated links or contact Joshua Kneifel at joshua.kneifel@nist.gov or the BIRDS team at birds@nist.gov.